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Wisconsin Card Sorting Test (WCST)

Availability:	Please visit this website for more information about the instrument: <u>Wisconsin Card Sorting Test.</u>
Classification:	Supplemental: Cerebral Palsy (CP), Epilepsy and Multiple Sclerosis (MS)
Short Description of Instrument:	<p>The Wisconsin Card Sorting Test (WCST) was originally developed to assess abstract reasoning and ability to shift cognitive strategies in response to environmental changes. Over the years, it has gained popularity as a clinical neuropsychological instrument. Unlike other tests of abstraction, the WCST provides objective measures not only of overall ability, but also of particular sources of difficulty, for example, inefficient initial conceptualization, perseveration, failure to maintain set, and inefficient learning across several stages of the test. In addition, it is one of the very few tests that have shown specific sensitivity to brain lesions involving the frontal lobes. Accordingly, it can be very helpful in discriminating frontal from nonfrontal lesions.</p> <p>The test uses stimulus and response cards that show various forms in various colors and numbers. Individually administered, it requires the client to sort the cards according to different principles (i.e., by color, form, or number). As the test progresses, there are unannounced shifts in the sorting principle which require the client to alter his or her approach.</p> <p>In the past, as many as 32 different sorting methods have been used to administer the WCST. The Test Kit offered, however, includes a revised and expanded Manual with explicit instructions for standardized administration and scoring. The Manual reviews previous research with the WCST, presents demographically corrected normative data from 899 subjects aged 6.5 to 89 years, and provides essential interpretive and diagnostic guidelines. Reliability and validity information is also included, along with data from child and adolescent populations. In addition, the WCST Record Booklet provides space for recording demographic and referral information as well as raw scores, percentiles, T-scores, and standard scores.</p> <p>Epilepsy Specific Information: Hypothesis Testing Ability.</p> <p>Purpose: To assess deductive reasoning ability, perseverative ideation, and failure to maintain cognitive set.</p> <p>Primary Dependent Measure: Number of preservative responses.</p> <p>Secondary Dependent Measure: Number of categories.</p> <p>Time Estimate: 15–30 minutes.</p> <p>Scoring Estimate: 10 minutes.</p> <p>Vendor: Psychological Assessment Resources (PAR), 16130 North Florida Avenue, Lutz, FL 33549.</p>

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Comments / Special Instructions:	<p>The WCST assesses abstraction ability and the ability to shift (or tendency to perseverate to) cognitive strategies in response to changing reinforcement conditions. The subject sorts cards with different designs to 4 target cards according to latent sorting principles that shift at various points during the procedure.</p> <p>The WCST is recommended primarily for cross-sectional studies in which executive function is a focus of the study hypotheses. It may be insensitive to longitudinal change, due to substantial practice effects that develop after learning the task demands. For example, in normal samples, the number of perseverative errors and responses decreased by over half on retesting. Reliable change indices tend to exceed 1 SD (Strauss et al., 2006). It is also recommended as optional due to administrative burden (see below).</p> <p>Multiple versions of the WCST have been developed and normed, although Heaton's version remains the most commonly used. There is no clear consensus about the relative validity and responsiveness of the 64 and 128-card versions, although it has been suggested that the 128-card version may be more sensitive to subtler effects (Strauss et al., 2006). The test requires the card decks and test form. Copyrighted test materials and unlimited-use, computer administration and scoring programs are available from the publisher.</p> <p>Administration and scoring requires extensive training and experience, which is generally limited to neuropsychologists or experienced psychometricians. Extensive training is necessary even for the computer-administered version, since an experienced examiner is required to ensure compliance and maintain rapport during this challenging and often frustrating task. Norms for the 128 and 64 card versions are available for ages 6-89 and are education-adjusted.</p> <p>We are recommending the 64 card version due to time constraints of assessment. If the 128 card version is routinely used clinically at a site, performance can easily be rescored using the first 64 responses to obtain a 64 card value.</p>
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References:	<p>Key References:</p> <p>Berg EA. A simple objective test for measuring flexibility in thinking. <i>J Gen Psychol.</i> 1948;39:15–22.</p> <p>Grant DA, Berg EA. A behavioral analysis of degree of reinforcement and ease of shifting to new responses in a Weigl-type card-sorting problem. <i>J Exp Psychol.</i> 1948;38(4):404–11.</p> <p>Heaton SK, Chelune GJ, Talley JL, Kay GG, Curtiss KG. Wisconsin Card Sorting Test manual: Revised and expanded. Odessa, FL: Psychological Assessment Resources; 1993.</p> <p>Additional References:</p> <p>Bowden SC, Fowler KS, Bell RC, Whelan G, Clifford CC, Ritter AJ, Long CM. The reliability and internal validity of the Wisconsin Card Sorting Test. <i>Neuropsychol Rehab.</i> 1998;8(3):243–254.</p> <p>Bujoreanu IS, Willis WG. Developmental and neuropsychological perspectives on the Wisconsin Card Sorting Test in children. <i>Develop Neuropsychol.</i> 2008;33(5):584–600.</p> <p>Chase-Carmichael CA, Ris MD, Weber AM, Schefft BK. Neurologic validity of the Wisconsin Card Sorting Test with a pediatric population. <i>Clin Neuropsychol.</i> 1999;13(4):405–413.</p> <p>Chelune GJ, Baer RA. Developmental norms for the Wisconsin Card Sorting test. <i>J ClinExp Neuropsychol.</i> 1986;8(3):219–228.</p> <p>Donders J, Wildeboer MA. Validity of the WCST-64 after traumatic brain injury in children. <i>Clin Neuropsychol.</i> 2004;18(4):521–527.</p> <p>Greve KW. The WCST-64: a standardized short-form of the Wisconsin Card Sorting Test. <i>Clin Neuropsychol.</i> 2001;15(2):228–234.</p> <p>Igarashi K, Oguni H, Osawa M, Awaya Y, Kato M, Mimura M, Kashima H. Wisconsin card sorting test in children with temporal lobe epilepsy. <i>Brain Develop.</i> 2002;24(3):174–178.</p> <p>Lineweaver TT, Bond MW, Thomas RG, Salmon DP. A normative study of Nelson's (1976) modified version of the Wisconsin Card Sorting Test in healthy older adults. <i>Clin Neuropsychol.</i> 1999;13(3):328–347.</p> <p>Love JM, Greve KW, Sherwin E, Mathias C. Comparability of the standard WCST and WCST-64 in traumatic brain injury. <i>Appl Neuropsychol.</i> 2003;10(4):246–251.</p> <p>Merrick EE, Donders J, Wiersum M. Validity of the WCST-64 after traumatic brain injury. <i>Clin Neuropsychol.</i> 2003;17(2):153–158.</p>
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